WHAT IS CLAIMED IS:

1. A device comprising:

an integrated circuit;

a deposited tin in electrical contact with a portion of the integrated circuit, the deposited tin formed by electrodeposition from a bath, the deposited tin including a residue characteristic of the bath, the bath including

a bath-soluble tin compound,

a strong acid, and

a sulfopropylated anionic surfactant.

2. The device of claim 1, wherein the sulfopropylated anionic surfactant comprises a polymeric hydrophilic portion.

3. The device of claim 2, wherein the sulfopropylated anionic surfactant comprises one or more polyethyleneglycol alkyl-3-sulfopropyl diethers of the formula

$$R(OCH_2CH_2)_nO(CH_2)_3SO_3X$$

where

R is an n-alkyl, and

X is a species capable of becoming a cation in aqueous solution.

4. The device of claim 3, wherein the bath includes between 1 and 2 grams of the one or more polyethyleneglycol alkyl-3-sulfopropyl diethers.

5. The device of claim 1, wherein the bath includes a grain refiner to restrict grain growth during deposition.

6. The device of claim 2, wherein the grain refiner comprises a system of conjugated pi bonds.

7. The device of claim 6, wherein the bath includes between approximately 10 and 30 ppm of benzalacetone grain refiner.

8. The device of claim 1, wherein the bath-soluble tin compound comprises a stannous salt.

9. The device of claim 8, wherein the stannous salt comprises one or more stannous alkane sulfonates of the formula $(RSO_3)_2Sn$, where R is an alkyl group that includes from one to twelve carbon atoms.

10. The device of claim 8, wherein the bath includes between approximately 20 and 40 grams per liter of one of a stannous methane sulfonate, a stannous sulfate, and a mixture thereof.

11. The device of claim 1, wherein the strong acid comprises one or more of a sulfuric acid, an alkane sulfonic acid, an alkanol sulfonic acid, and a mixture thereof.

12. The device of claim 11, wherein the strong acid comprises one or more alkane sulfonic acids of the formula RSO_3H where R is an alkyl group that includes from one to twelve carbon atoms.

13. The device of claim 11, wherein the bath includes between approximately 100 and 200 grams per liter of one of a methanesulfonic acid, a sulfuric acid, and a mixture thereof.

14. The device of claim 13, wherein the bath includes between approximately 130 and 170 grams per liter of one of the methanesulfonic acid, the sulfuric acid, and the mixture thereof.

15. The device of claim 1, wherein the integrated circuit includes parts of a microprocessor.

16. A composition comprising:

between approximately 20 and 40 grams per liter of one of stannous methane sulfonate, stannous sulfate, and a mixture thereof,

between approximately 100 and 200 grams per liter of one

of methanesulfonic acid, sulfuric acid, and a mixture thereof, and

between approximately 1 and 2 grams per liter of one or more polyethyleneglycol alkyl-3-sulfopropyl diethers.

17. The composition of claim 16, further comprising a grain refiner to restrict grain growth during electrodeposition.

18. The composition of claim 17, wherein the grain refiner comprises between approximately 10 and 30 ppm benzalacetone.

19. The composition of claim 16, further comprising a semiconductor device arranged for electrodeposition of tin thereon.

20. The composition of claim 16, further comprising a deposition substrate biased to obtain a deposition current density of greater than approximately 30 mA/cm^2.

21. A method comprising:

electroplating tin with a current density of greater than approximately 30 mA/cm^2 and a plating efficiency of greater than approximately 95%.

22. The method of claim 21, wherein electroplating the tin comprises electroplating the tin with the current density greater than approximately 40 mA/cm^2.

23. The method of claim 22, wherein electroplating the tin comprises electroplating the tin with the current density greater than approximately 50 mA/cm^2.

24. The method of claim 21, wherein electroplating the tin comprises electroplating the tin from a solution including

a bath-soluble tin compound,

a strong acid, and

a sulfopropylated anionic surfactant.

25. The method of claim 24, wherein electroplating the tin comprises electroplating the tin from the solution including

one or more stannous alkane sulfonates of the formula $(RSO_3)_2Sn$,

one or more of a sulfuric acid, an alkane sulfonic acid, an alkanol sulfonic acid, and a mixture thereof, and

the sulfopropylated anionic surfactant having a polymeric hydrophilic portion.

26. The method of claim 25, wherein electroplating the tin comprises electroplating the tin from the solution

including

between approximately 20 and 40 grams per liter of one of stannous methane sulfonate, stannous sulfate, and a mixture thereof,

between approximately 100 and 200 grams per liter of one of methanesulfonic acid, sulfuric acid, and a mixture thereof, and

between approximately 1 and 2 grams of one or more polyethyleneglycol alkyl-3-sulfopropyl diethers per liter.

27. The method of claim 21, wherein electroplating the tin comprises electroplating tin onto a semiconductor device.

28. The method of claim 27, wherein electroplating tin onto the semiconductor device comprises electroplating tin bumps to connect a semiconductor die to packaging.

29. The method of claim 21, wherein electroplating the tin comprises forming a tin deposit that is greater than 99% tin.

30. A method comprising:

electroplating tin from a bath including

between approximately 20 and 40 grams per liter of one of stannous methane sulfonate, stannous sulfate, and a mixture thereof,

between approximately 100 and 200 grams per liter of one of methanesulfonic acid, sulfuric acid, and a mixture thereof, and

between approximately 1 and 2 grams per liter of one or more polyethyleneglycol alkyl-3-sulfopropyl diethers.

31. The method of claim 30, wherein electroplating tin from the bath comprises electroplating tin from the bath including between approximately 10 and 30 ppm benzalacetone.

32. The method of claim 30, wherein electroplating tin from the bath comprises electroplating tin from the bath including between approximately 130 and 170 grams per liter of one of methanesulfonic acid, sulfuric acid, and the mixture thereof.

33. A system comprising:

a bus forming a path for signals;

a packaged semiconductor device disposed to communicate with signals over the bus, the packaged semiconductor device including a semiconductor die having under bump metal pads in electrical contact with a deposited tin formed by electrodeposition from a bath, the deposited tin including a residue characteristic of the bath, the bath including between approximately 20 and 40 grams per liter

of one of stannous methane sulfonate, stannous sulfate, and a mixture thereof, between approximately 100 and 200 grams per liter of one of methanesulfonic acid, sulfuric acid, and a mixture thereof, and between approximately 1 and 2 grams per liter of one or more polyethyleneglycol alkyl-3-sulfopropyl diethers..

34. The system of claim 33, wherein the deposited tin includes a residue characteristic of the bath including between approximately 10 and 30 ppm benzalacetone.